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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/485,596	10/16/2000	Klaus Huber	2345/113	6178

26646 7590 11/17/2003

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EXAMINER

DEPPE, BETSY LEE

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/485,596	HUBER ET AL.	
	Examiner Betsy L. Deppe	Art Unit 2634	
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>			
<b>Period for Reply</b>			
<b>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</b>			
<ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>			
<b>Status</b>			
1) <input type="checkbox"/> Responsive to communication(s) filed on _____.			
2a) <input type="checkbox"/> This action is FINAL.                    2b) <input type="checkbox"/> This action is non-final.			
3) <input checked="" type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.			
<b>Disposition of Claims</b>			
4) <input checked="" type="checkbox"/> Claim(s) <u>13-23</u> is/are pending in the application.			
4a) Of the above claim(s) _____ is/are withdrawn from consideration.			
5) <input type="checkbox"/> Claim(s) _____ is/are allowed.			
6) <input type="checkbox"/> Claim(s) _____ is/are rejected.			
7) <input checked="" type="checkbox"/> Claim(s) <u>13-23</u> is/are objected to.			
8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.			
<b>Application Papers</b>			
9) <input type="checkbox"/> The specification is objected to by the Examiner.			
10) <input checked="" type="checkbox"/> The drawing(s) filed on <u>16 October 2000</u> is/are: a) <input type="checkbox"/> accepted or b) <input checked="" type="checkbox"/> objected to by the Examiner.			
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).			
11) <input type="checkbox"/> The proposed drawing correction filed on _____ is: a) <input type="checkbox"/> approved b) <input type="checkbox"/> disapproved by the Examiner.			
If approved, corrected drawings are required in reply to this Office action.			
12) <input type="checkbox"/> The oath or declaration is objected to by the Examiner.			
<b>Priority under 35 U.S.C. §§ 119 and 120</b>			
13) <input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).			
a) <input checked="" type="checkbox"/> All b) <input type="checkbox"/> Some * c) <input type="checkbox"/> None of:			
1. <input type="checkbox"/> Certified copies of the priority documents have been received.			
2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____.			
3. <input checked="" type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).			
* See the attached detailed Office action for a list of the certified copies not received.			
14) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).			
a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.			
15) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.			
<b>Attachment(s)</b>			
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)		4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.	
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)	
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4.5</u> .		6) <input type="checkbox"/> Other: _____	

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the modulating step in claim 19 and the circuit arrangement recited in claim 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

With respect to claim 22, although Figure 2 shows a demodulation device with a second decoder unit for decoding the received signal in a frequency domain and including a second multiplier, second integrator and second discriminator (see claim 22, lines 3-6), it does not show the first decoder unit for decoding in a time domain as recited in claim 22, lines 1-2. Furthermore, with regard to claim 22, although Figure 5 shows a first decoder unit for decoding in the time domain and a second decoder unit for decoding in the frequency domain, the decoder units include a common discriminator (19'), not respective discriminators as recited in claim 21, line 4 and claim 22, line 5. Therefore, the drawings do not show the circuit arrangement as recited in claim 22.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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2. The drawings are objected to because:

- a. elements in Figures 1-4 (e.g. 17 and 19 in Figure 1 and 22.1 and 22.2 in Figure 2) should be labeled so that one viewing the drawings may understand the subject matter of the claimed invention without referring to the detailed description.
- b. in Figure 1, there should be an arrow indicating an input of  $f_0(t)$  to multiplier 15 in the receiver.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. The claims are objected to because of the following informalities:

since the limitations in the body of claims 13 and 20 involve both transmitting and receiving a signal, the Examiner suggests changing "transmitting" in line 1 of the respective claims to "communicating" for clarification;

in claim 20, line 7, "Hermite" should be "orthogonal" (see line 4 and claim 13, line 6); and

in claim 22, lines 2 and 4, "the signal" should be "the **received** signal".

Appropriate correction is required.

### ***Allowable Subject Matter***

4. Claims 13-23 are allowable.

5. The following is a statement of reasons for the indication of allowable subject matter: prior art of record does not teach or suggests in combination a method comprising the steps of (a) coding a message using a orthogonal function to form a transmission signal wherein the orthogonal function is an approximation of a Hermite function; (b) performing a Fourier transform on a received signal; and (c) decoding the Fourier transformed signal using the orthogonal function, as recited in claim 13. Furthermore, prior art of record does not teach or suggests in combination a circuit arrangement comprising a coding device and a demodulation device operating as recited in claim 20, lines 3-9.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Saha (US Patent No. 4,730,344) discloses a demodulator comprised of a multiplier, integrator and discriminator connected in series. However, Saha does not does not teach or suggests in combination performing a Fourier transform on a received signal and using an orthogonal function that is an approximation of a Hermite function.
- b. Crespo et al. (US Patent No. 5,175,743) discloses a CDMA system that performs Fourier transform on a received signal and then decodes the Fourier transformed signal. However, Awateer et al. does not teach or suggests in

combination using an orthogonal function that is an approximation of a Hermite function.

c. Awater et al. (US Patent No. 5,862,182) discloses a system that codes a message using an orthogonal function, performs Fourier transform on a received signal and then decodes the Fourier transformed signal. However, Awater et al. does not teach or suggests in combination using an orthogonal function that is an approximation of a Hermite function.

d. Fertner et al. (US Patent No. 6,169723 B1) teaches that Hermite symmetry reduces discrete Fourier transform computations.

e. Rakib et al. (US Patent No. 6,356,555 B1) discloses a method and system that orthogonally codes a transmission message. However, Rakib et al. does not teach or suggests in combination performing a Fourier transform on a received signal and using an orthogonal function that is an approximation of a Hermite function.

7. This application is in condition for allowance except for the following formal matters: objections to the drawings and the claims.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (703) 305-4960. The examiner can normally be reached on Monday, Tuesday and Friday (8:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (for Technology Center 2600 only)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

  
Betsy L. Deppe  
Primary Examiner  
Art Unit 2634  
November 12, 2003